THE AMERICAN MUSEUM JOURNAL

Volume XI January, 1911 Number 1

Published monthly from October to May inclusive by
THE AMERICAN MUSEUM OF NATURAL HISTORY
NEW YORK CITY

American Museum of Natural History

Seventy-seventh Street and Central Park West, New York City

BOARD OF TRUSTEES

President
HENRY FAIRFIELD OSBORN

First Vice-President
J. PIERPONT MORGAN

Second Vice-President
CLEVELAND H. DODGE

Treasurer
CHARLES LANIER

Secretary
J. HAMPDEN ROBB

THE MAYOR OF THE CITY OF NEW YORK
THE COMPTROLLER OF THE CITY OF NEW YORK
THE PRESIDENT OF THE DEPARTMENT OF PARKS

ALBERT S. BICKMORE
GEORGE S. BOWDOIN
JOSEPH H. CHOATE
THOMAS DEWITT CUYLER
JAMES DOUGLAS
ANSON W. HARD
ARCHER M. HUNTINGTON
ADRIAN ISELIN, JR.
ARTHUR CURTISS JAMES
A. D. JUILLIARD
GUSTAV E. KISSEL
SETH LOW
OGDEN MILLS
J. PIERPONT MORGAN, JR.
PERCY R. PYNE
WILLIAM ROCKEFELLER
JOHN B. TREVOR
FELIX M. WARBURG
GEORGE W. WICKERSHAM

EXECUTIVE OFFICERS

Director
HERMON CAREY BUMPUS

Assistant-Secretary and Assistant-Treasurer
GEORGE H. SHERWOOD

THE MUSEUM IS OPEN FREE TO THE PUBLIC ON EVERY DAY IN THE YEAR.

THE AMERICAN MUSEUM OF NATURAL HISTORY was established in 1869 to promote the Natural Sciences and to diffuse a general knowledge of them among the people, and it is in cordial coöperation with all similar institutions throughout the world. The Museum authorities are dependent upon private subscriptions and the dues from members for procuring needed additions to the collections and for carrying on explorations in America and other parts of the world. The membership fees are,

Annual Members	$ 10	Fellows	$ 500
Sustaining Members (Annual)	25	Patrons	1000
Life Members	100	Benefactors (Gift or bequest)	50,000

THE MUSEUM LIBRARY contains over 60,000 volumes with a good working collection of publications issued by scientific institutions and societies in this country and abroad. The library is open to the public for reference daily — Sundays and holidays excepted — from 9 A. M. to 5 P. M.

THE MUSEUM PUBLICATIONS are issued in six series: The American Museum Journal, Annual Report, Anthropological Papers, Bulletins, Guide Leaflets and Memoirs. Information concerning their sale may be obtained at the Museum Library.

GUIDES FOR STUDY OF EXHIBITS are provided on request by the Department of Public Education. Teachers wishing to bring classes should write or telephone the Department for an appointment, specifying the collection to be studied. Lectures to classes may also be arranged for. In all cases the best results are obtained with small groups of children.

WORKROOMS AND STORAGE COLLECTIONS may be visited by persons presenting membership tickets. The storage collections are open to all persons desiring to examine specimens for special study. Applications should be made at the information desk.

THE MITLA RESTAURANT in the east basement is reached by the elevator and is open from 12 to 5 on all days except Sundays. Afternoon Tea is served from 2 to 5. The Mitla Room is of unusual interest as an exhibition hall being an exact reproduction of temple ruins at Mitla, Mexico.

The American Museum Journal

CONTENTS FOR JANUARY, 1911

MARY CYNTHIA DICKERSON, *Editor*

Subscription, One Dollar per year. Fifteen cents per copy

A subscription to the JOURNAL is included in the membership fees of all classes of Members of the Museum

Subscriptions should be addressed to The American Museum Journal, 30 Boylston St., Cambridge, Mass., or 77th St. and Central Park West, New York City

Entered as second-class matter January 12, 1907, at the Post-office at Boston, Mass. Act of Congress, July 16, 1894

From a photograph, copyright, by Kermit Roosevelt

THE SQUARE-MOUTHED RHINOCEROS

The white or square-mouthed rhinoceros is now found only in a game preserve in South Africa and on a narrow stretch of territory along the west bank of the Upper Nile

The American Museum Journal

Vol. XI JANUARY, 1911 No. 1

THE SQUARE-MOUTHED RHINOCEROS

By Theodore Roosevelt

Colonel Roosevelt has presented to the American Museum two specimens of the rare White Rhino, and gives to the Journal *from his personal experiences and observations in Africa the following account of this great horned beast of the Lado. On the arrival of the skins at the Museum, work will begin at once on the task of preparing and mounting them for exhibition.*

ON our trip in Africa for the Smithsonian, in addition to the series of specimens of big game for the Smithsonian itself, we also prepared a few skins of the largest and rarest animals for other collections: a head of the white rhinoceros for Mr. Hornaday's noteworthy collection, a bull elephant for the University of California, two cow elephants and a bull and cow of the white rhino for the American Museum of Natural History. I was especially anxious to get this pair of white rhinos, because the American Museum is in my own city, because my father was one of its founders and because my admiration is great for the work of the men who have raised this institution to its present high position. The skins of the two cow elephants were prepared by Carl Akeley, with whom I had gone after them; the other specimens were preserved by Edmund Heller and R. J. Cunninghame as a labor of love.

The white rhinoceros is, next to the elephant, the largest of existing mammals. There are three groups of existing rhinoceros: the two-horned species of Africa, the one-horned species of the Indian region and the little Sumatran rhinoceros — the three separate stems of ancestry going back at least to early Pliocene and probably to Miocene times. At one time rhinos of many different kinds and covering the widest variety of form and habit abounded in America, and in Europe species lasted to the days of palæolithic man.

There are two wholly distinct kinds in Africa, differing from one another as much as the moose does from the wapiti. They are commonly called the black and the white; but as in fact they are both of a dark slate hue, it is better to call the former the hook-lipped and the latter the square-mouthed. They intergrade in size, but the square-mouthed averages bigger and longer-horned. The hook-lipped or common black kind is still plentiful in

* The illustrations are used through the courtesy of Charles Scribner's Sons.

From a photograph, copyright, by Kermit Roosevelt

many places from Abyssinia to the Zambezi; it is a browser and feeds chiefly on twigs and leaves. The white or square-mouthed kind is now found only in a game preserve in South Africa and on a narrow stretch of territory along the west bank of the Upper Nile. It is purely a grazer.

In its range the square-mouthed rhino offers an extraordinary example of discontinuous distribution. It was originally known from South Africa, south of the Zambezi, and was believed to exist nowhere north of that river. Then, when it had been practically exterminated in South Africa, it was rediscovered far to the north beyond the equator. In the immense extent of intervening territory it has never been found.

We spent over a month in the Lado, the present habitat of this huge sluggish ungulate. We collected a good series of specimens, nine in all — bulls and cows and one calf. Of course, we killed none save those absolutely needed for scientific purposes. All told we saw thirty or forty individuals and Kermit got some fine photographs, the first ever taken of living members of the species. Their eyesight was so dull and their brains so lethargic that time and again we got within a score or so of feet and watched individuals as long as we cared to.

They drank at night, either at the Nile or at some pool, and then moved back, grazing as they went, into the barren desolation of the dry country. About nine o'clock or thereabouts they lay down, usually under the scanty shade of some half-leafless thorn tree. In mid afternoon they rose and grazed industriously until sundown. But as with all game, they sometimes varied their times of resting, eating and drinking. Ordinarily we found the bulls singly and the cow along with her calf; but occasionally three or four would go together. Cow herons frequently accompanied them, as they do elephants and buffaloes, perching unconcernedly on their heads and bodies.

They were not difficult to get as our trackers followed their trail with little difficulty; and they seemed less excitable and bad-tempered than their hook-lipped cousins, although on occasion they charge with determination, so that a certain amount of care must be exercised in dealing with them.

From a photograph, copyright, by Kermit Roosevelt

A HERD OF ELEPHANT IN AN OPEN FOREST OF HIGH TIMBER

Photograph taken from the vantage point of the limb of a tree five or six feet from the ground and twenty-five yards distant

The elephant and the square-mouthed rhinoceros are the largest of existing mammals. Colonel Roosevelt has presented two elephants to the Museum in addition to his valuable gift of a bull and cow of the white rhino

6 A DINOSAUR MUMMY

This dinosaur (*Trachodon annectens*) discovered in 1908 by Charles H Sternberg of Kansas differs from all others previously found in having the skin present, drawn tightly over the skeleton. The new knowledge gained strengthens the theory of aquatic habit for dinosaurs of this genus

The Dinosaur Mummy was discovered in Wyoming and was purchased by the Museum through the Morris K. Jesup Fund

A DINOSAUR MUMMY

By Henry Fairfield Osborn

TWO years ago, through the Jesup Fund, the Museum came into possession of a most unique specimen, discovered in August, 1908, by the veteran fossil hunter Charles H. Sternberg of Kansas. It is a large herbivorous dinosaur belonging to the closing period of the Age of Reptiles, and is known to palæontologists as *Trachodon*, or more popularly as the "duck-billed dinosaur."

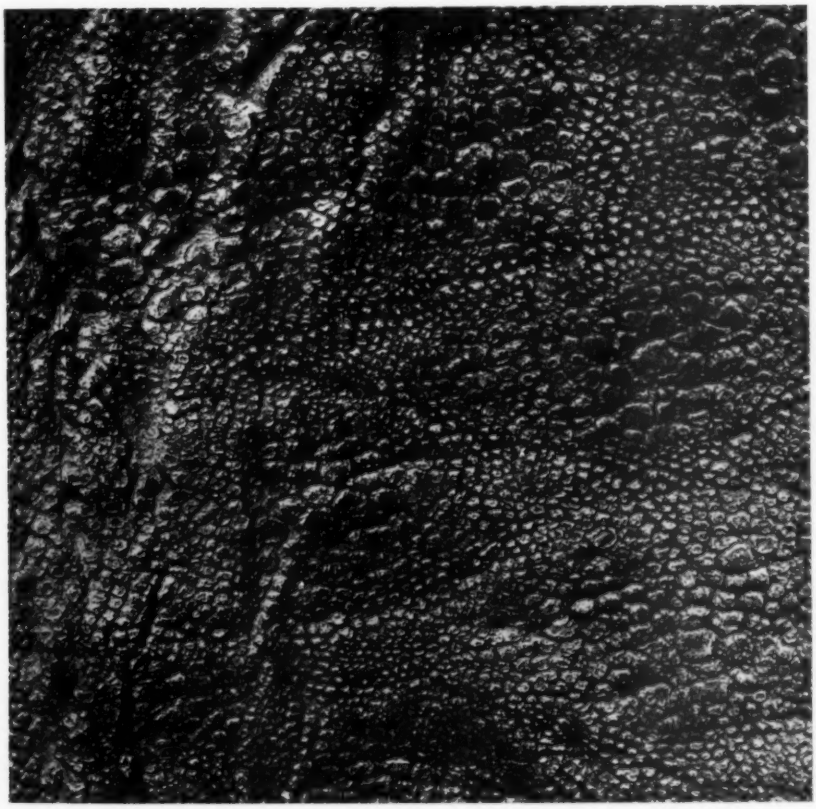
The skeleton, or hard parts of these very remarkable animals has been known for over forty years, and a few specimens had preserved with them small areas of the impressions of the epidermal covering, but it was not until the discovery of the Sternberg specimen that a knowledge of the outer covering of these dinosaurs was gained. It appears probable that in a number of cases these priceless skin impressions were mostly destroyed in removing the fossil specimens from their surroundings because the explorers were not expecting to find anything of the kind. Altogether seven specimens have been discovered in which these delicate skin impressions were partly preserved, but the "trachodon mummy" far surpasses all the others, as it yields a nearly complete picture of the outer covering.

The reason the Sternberg specimen (*Trachodon annectens*) may be known as a dinosaur "mummy" is that in all the parts of the animal which are preserved (i. e. all except the hind limbs and the tail) the epidermis is shrunken around the limbs, tightly drawn along the bony surfaces and contracted like a great curtain below the chest area. This condition of the epidermis suggests the following theory of the deposition and preservation of this wonderful specimen, namely: that after dying a natural death the animal was not attacked or preyed upon by its enemies and the body lay exposed to the sun entirely undisturbed for a long time, perhaps upon a broad sand flat of a stream in the low-water stage; the muscles and viscera thus became completely dehydrated, or desiccated by the action of the sun, the epidermis shrank around the limbs, was tightly drawn down along all the bony surfaces, and became hardened and leathery; on the abdominal surfaces the epidermis was certainly drawn within the body cavity, while it was thrown into creases and folds along the sides of the body, owing to the shrinkage of the tissues within. At the termination of a possible low-water season, during which these processes of desiccation took place, the "mummy" may have been caught in a sudden flood, carried

DUCK–BILLED DINOSAURS

Fossil reptiles with spreading webbed feet, compressed tail and duck-like bill, all of which indicate a more or less aquatic existence. Compare with restoration, p. 10

The jaws are provided with a marvelous grinding apparatus composed of a complex of more than two thousand separate teeth



PORTION OF SKIN FROM TRACHODON MUMMY

This reptile had neither scales nor bony covering, but a thin epidermis made up of tubercles of two sizes, the larger size predominating on surfaces exposed to the sun

down the stream, and rapidly buried in a bed of fine river sand intermingled with sufficient elements of clay to take a perfect cast or mold of all the epidermal markings before any of the epidermal tissues had time to soften under the solvent action of the water. In this way the markings were indicated with absolute distinctness, and as the specimen will soon be mounted in a glass case, the visitor will be able by the use of a hand glass to study even the finer details of the pattern, although of course there is no trace either of the epidermis itself, which has entirely disappeared, or of the pigmentation, or coloring, if such existed.

The discovery of this specimen discloses the fact that although attaining a height of fifteen to sixteen feet and a length of thirty feet, the trachodons were not covered with scales or a bony protecting arma-

DUCK-BILLED DINOSAUR. A PRELIMINARY RESTORATION BY CHARLES R. KNIGHT

ture, but with dermal tubercles of relatively small size, which varied in shape and arrangement in different species, and that not improbably associated with this varied epidermal pattern there was a varied color pattern. The theory of a color pattern is based chiefly upon the fact that the larger tubercles concentrate and become more numerous on all those portions of the body exposed to the sun, that is, on the outer surfaces of the fore and hind limbs, and appear to increase also along the sides of the body and to be more concentrated on the back. On the less exposed areas, the under side of the body and the inner sides of the limbs, the smaller tubercles are more numerous, the larger tubercles being reduced to small, irregularly arranged patches. From analogy with existing lizards and snakes we may suppose, therefore, that the trachodons presented a darker appearance when seen from the back and a lighter appearance when seen from the front.

The thin character of the epidermis as revealed by this specimen favors also the theory that these animals spent a large part of their time in the water, which theory is strengthened by the fact that the diminutive fore limb terminates not in claws or hoofs, but in a broad extension of the skin, reaching beyond the fingers and forming a kind of paddle. This marginal web, which connects all the fingers with each other, together with the fact that the lower side of the fore limb is as delicate in its epidermal structure as the upper, certainly tends to support the theory of the swimming rather than the walking or terrestrial function of this fore paddle, as indicated in the accompanying preliminary restoration that was made by Charles R. Knight working under the writer's direction. One is drawn in the conventional bipedal, or standing posture, while the other is in a quadrupedal pose, or walking position, sustaining or balancing the fore part of the body on a muddy surface with its fore feet. In the distant water a large number of the animals are disporting themselves.

The designation of these animals as the "duck-billed" dinosaurs in reference to the broadening of the beak, has long been considered in connection with the theory of aquatic habitat. The conversion of the fore limb into a sort of paddle, as evidenced by the Sternberg specimen, strengthens this theory.

This truly wonderful specimen, therefore, nearly doubles our previous insight into the habits and life of a very remarkable group of reptiles.

WARRIORS WITH SHIELDS, SINGING AS THEY MARCH

INDUSTRY AND ART OF THE NEGRO RACE

THE EXHIBITION IN THE MUSEUM'S AFRICAN HALL ENFORCES NEW IDEAS AS TO THE CAPACITIES OF THE NEGRO RACE AND REVEALS THE GROUND ON WHICH ARE BASED SOME NEW THEORIES REGARDING THE NEGRO'S RELATION TO CIVILIZATION

By Robert H. Lowie

Decorative illustrations from African Hall frescoes by Albert Operti

WHILE a few years ago all the Museum's ethnological material from Africa could have been conveniently placed in a few cases, the acquisition of two unusually large collections from the Congo seemed to warrant the installation of a hall especially devoted to African

ethnology. The great preponderance of material from the Congo as compared with other regions of Africa made necessary the allotment of an apparently disproportionate amount of space, a large rectangular area in the center being set aside for this purpose. There is a certain measure of justification, however, for the prominence thus given to a single region. The Congo embraces within its boundaries tribes representing with special clearness the development of negro culture as uninfluenced by external causes; it includes not only divisions of the Pygmy race representing perhaps the lowest of cultural stages to be found in Africa, but also a number of Bantu-speaking negroes whose artistic work may be fairly taken as representative of the capacities of the African natives.

The plan of arrangement was designed to be, as nearly as possible, geographical. The as yet uninstalled collections from parts north, east, south and west of the Congo are to be placed ultimately in corresponding positions with reference to the large central rectangle; within this central area devoted to the Congo a similar geographical plan was actually followed as rigidly as the nature of the material and other practical conditions permitted. Thus, the visitor entering the African Hall is confronted by a row of cases exhibiting material from the southern Congo, while a series of mats from the same district is stretched in frames above. Passing to the east, he finds along the eastern border of the central area the material from the eastern Congo, while the space, as yet unoccupied, between this

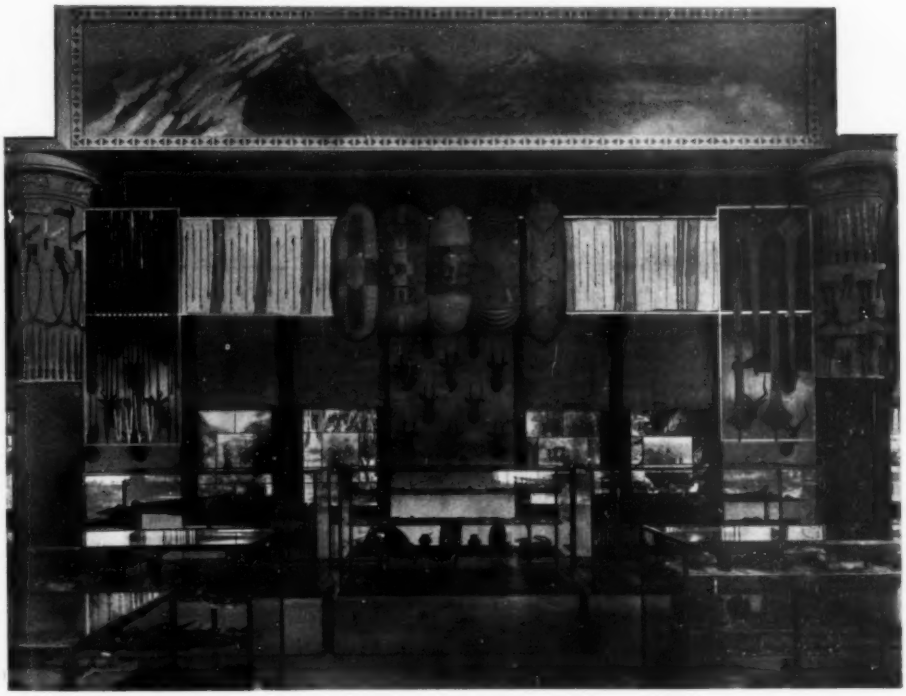
Portion of transparency in African Hall. The shaved head and abundant neck and ear ornaments are typical of East Africa

row of cases and the windows is to be dedicated to East Africa. Here, as throughout the perimeter of the Congo area, spears, shields, battle axes and other specimens are grouped on pillars or fastened in frames above the cased material from the same territory.

A rather novel device was hit upon to illustrate phases of native life such as can scarcely ever be represented adequately by actual specimens. Thus, the pastoral life of the Masai is not clearly shown by an exhibition of milk jugs, and the crossing of a river on a native bridge cannot be very vividly presented to a visitor by a cased section of the bridge. Similarly, the necessarily piecemeal installation of garments and objects of personal adornment from some district hardly permits the construction of a picture of the fully-dressed warrior. Accordingly, there was obtained a large series of standard photographs illustrating various aspects of African culture; from these, colored enlargements on glass were prepared, and placed in the lower window frames as transparencies. These transparencies, which embrace in scope the entire African continent, supplementing the material on exhibition, are likely to convey to the general public a clearer and more impressive picture of aboriginal African culture than could otherwise be hoped for.

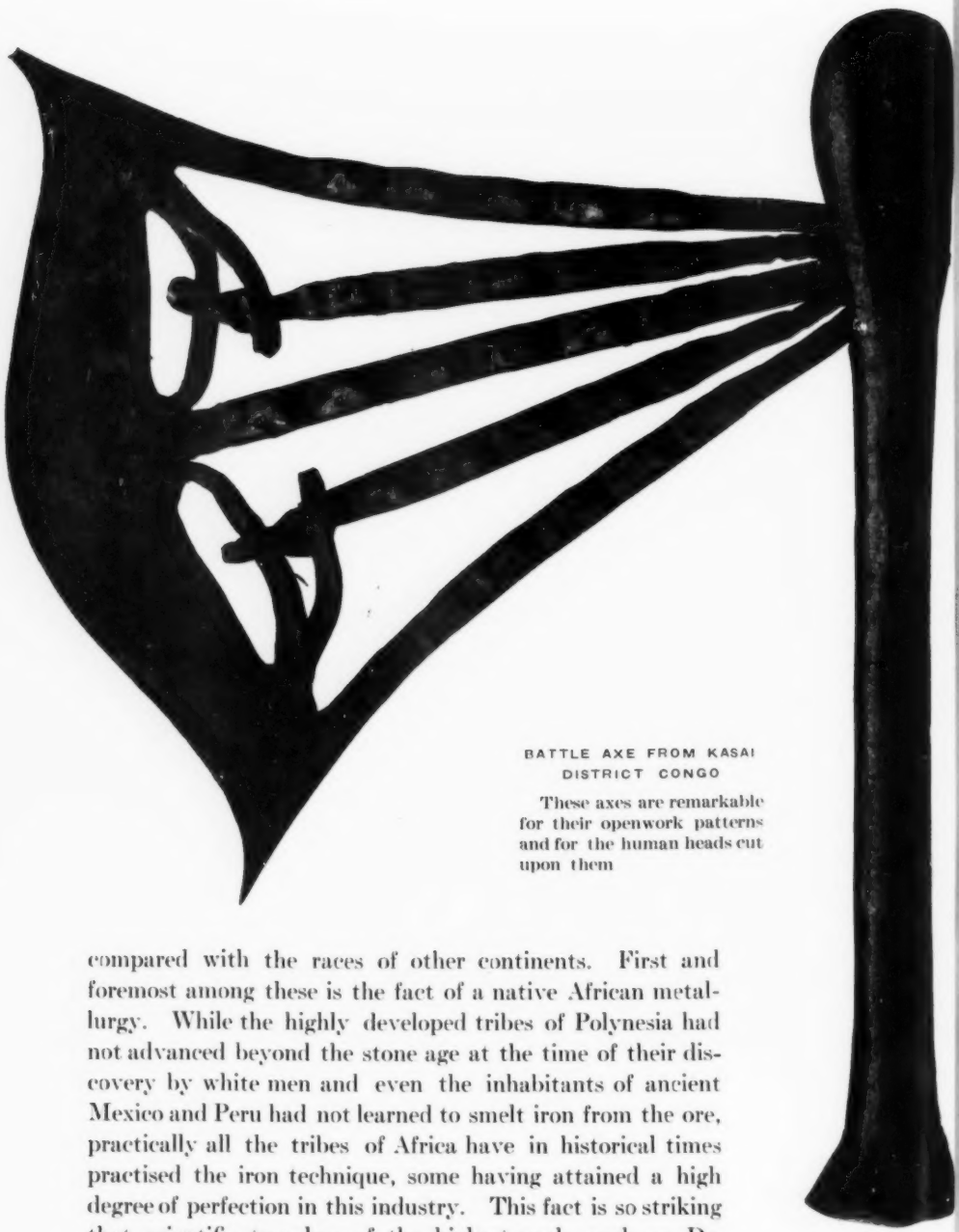
So far as the exhibition of the material itself is concerned, especial care was taken to emphasize certain broad features which

the average layman is not likely to associate with the African aborigines, but which are nevertheless in the highest degree characteristic of them as



SMALL SECTION OF AFRICAN HALL

Editorial Note: Frescoes along the gallery above, a frieze spanning the distance from pillar to pillar, and colored transparencies in the windows produce a strong decorative effect in addition to correlating vividly the technical exhibits in the cases with African life and customs. These plans for the hall are accredited to Director Hermon C. Bumpus who also is the originator of the idea carried out in this and in other halls as to the apportionment of space. That is, the space along the east and west sides of the African Hall from north to south is destined to indicate the relative geographical distribution of the various tribes around the great heart of Africa, the Congo. So that in walking the length of the hall along the right, and back along the left, one may pass in review African industry, art and tribal customs as if actually traveling north from the Cape of Good Hope to the Mediterranean, east of the Congo, and south again, west of the Congo — in other words, from the Bushmen to the tribes of the Nile and from the Sahara tribes to the Hottentots. Such a plan gives a forceful and natural arrangement for the disposition of any collection of heterogeneous materials from a region. The installation of the collections in the cases is the work of Robert H. Lowie, Assistant Curator in the Department of Anthropology.



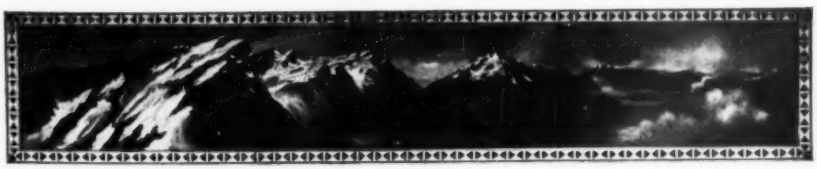
BATTLE AXE FROM KASAI DISTRICT CONGO

These axes are remarkable for their openwork patterns and for the human heads cut upon them

compared with the races of other continents. First and foremost among these is the fact of a native African metallurgy. While the highly developed tribes of Polynesia had not advanced beyond the stone age at the time of their discovery by white men and even the inhabitants of ancient Mexico and Peru had not learned to smelt iron from the ore, practically all the tribes of Africa have in historical times practised the iron technique, some having attained a high degree of perfection in this industry. This fact is so striking that scientific travelers of the highest rank, such as Dr. Schweinfurth and Professor von Luschan, have advanced the theory that the African negroes were the originators of the technique and transmitted it through the intermediation of other peoples to the ancestors of our civilized

BAKUBA PILECLOTH AN EXAMPLE OF PLUSH WEAVING

The men weave the cloth from the fibres of the raphia palm, then the women embroider upon it geometrical patterns and give a final shaving which produces a plush-like fabric

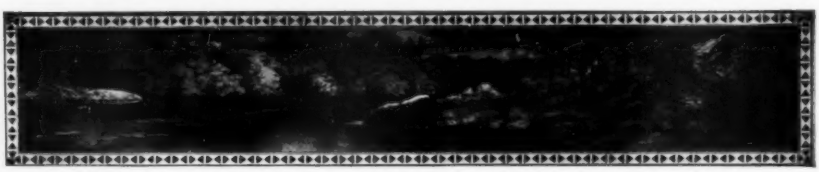


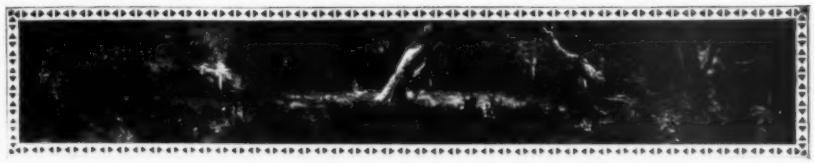
nations of to-day. Should this theory prove tenable, it is obvious that a complete revision of popular beliefs as to the negro's relation to modern civilization would be a necessary consequence. However this may be, it was clearly essential to emphasize metal-work in the African Hall. A group of negro blacksmiths, which had been in the possession of the Museum for a number of years, was given a conspicuous place in the northern section of the Hall, and in the decorative panels overhanging the cases, as well as on the pillars marking the perimeter of the Congo area, African spears and battle-axes, throwing-knives and scimitars were made to predominate.

CARVED WOODEN VASE, KASAI DISTRICT

In this exceptionally beautiful piece the more usual angular design in imitation of the interlacing strands of basketwork has been transformed into a pattern of gracefully curved lines

Another phase of activity which is not usually associated with the African race has underlying it a strong development of the æsthetic sense, and the new exhibits are likely to carry conviction on this point. The number of different types of musical instruments utilized by the negroes contrasts favorably with their relative scarcity as exhibited in other halls. Far more imposing, however, is the array of decorative woodwork and pilecloth





Photograph by Rev. G. W. Stahlbrand

CONGO PYGMIES IN THE DEATH DANCE

from the Kasai District of the Congo, the patterns of which occasionally rise to classic beauty of composition. Even the ironwork, aside from its excellence from a utilitarian point of view, is at times equally impressive by the almost incredible virtuosity of its ornamentation. The exhibits are thus likely to temper current misunderstandings as to the capacities of the negro race and to carry home to a wider public some of the most fundamental and now firmly established conceptions of ethnological science.

A NEW ORIOLE FROM MEXICO

By Frank M. Chapman

AMONG the most interesting results attending the Museum's expedition to Mexico to secure material for a habitat group of tropical birds, was the discovery of a new species of oriole. The bird is most nearly related to our orchard oriole, which prior to this time has been distinguished by the fact that it had no close relatives, its rich chestnut colors being strikingly unlike the orange dress of most members of the genus *Icterus*.

The new bird was discovered by Mr. Louis Agassiz Fuertes, the artist of the expedition, and in view of this fact, as well as in recognition of his invaluable services to ornithology, it has been named, in the January issue of the *Auk*, the official organ of the American Ornithologists' Union, *Icterus fuertesi*. The colored plate of the new bird, drawn by Mr. Fuertes, is here reproduced through the courtesy of the Union.

The discovery of this very distinct new species in a region the bird life of which was supposed to be well-known, illustrates how extremely restricted is the range of many tropical birds, and at the same time emphasizes our comparative ignorance of the bird life of tropical America.

Four specimens of Fuertes's oriole were secured. They were all taken on the banks of the Tamesi River, some thirty-five miles in an air-line and seventy-five by water from Tampico on the Gulf coast of Mexico. The members of the Museum expedition were here the guests of Mr. Thomas H. Silsbee, on the sugar plantation of Paso del Haba, and the new birds were found only in the scrubby second-growth which has appeared on the banks of the river from which the forest had been cleared in establishing the plantation. Whether they also inhabited the somewhat scanty growth away from the vicinity of the river, we did not ascertain since the surprising abundance of birds in the river-forest claimed all our attention.

At this time (April 3–9, 1910) the great yellow-headed parrots (*Amazona oratrix*) so popular as cage-birds, together with somewhat smaller red-headed parrots (*Amazona viridigenalis*) and two species of paroquets were beginning to nest, and several pairs had selected hollow limbs in the trees about our camp. There were also trogons (*Trogon ambiguus*), motmots (*Momotus lessonii*), chachalaccas (*Ortalis vetula mccalli*) and many other birds characteristic of the tropics, most of which were at the northern limit of their range. The region, therefore, has an especial interest as the nearest point to New York City at which a well-developed tropical fauna can be found.

ICTERUS FUERTESI CHAPMAN
ADULT MALE AND FEMALE
(Two-thirds natural size)

AROUND THE WORLD FOR THE MUSEUM*

By Roy C. Andrews

THROUGH the coöperation of the Bureau of Fisheries at Washington with the Director of the American Museum, I received a temporary appointment on the United States ship Albatross to do collecting, principally of mammals and birds, on an expedition to Borneo and the islands of the Dutch East Indies. By agreement, the types of new species and series of duplicates were to go to the National Museum, the remainder of the material collected being reserved for the American Museum. This was in the summer of 1909 and the Albatross at the time was cruising in Philippine waters.

Leaving New York in August, 1909, I sailed from Seattle to Hong Kong by way of Yokohama and after waiting four days in Hong Kong for a typhoon to subside, left just in time to meet a second storm about halfway across the China Sea. At Manila I learned that the Albatross was on its way from Zamboanga and that almost ten days must elapse before she would be ready to leave for the southern trip; consequently the time seemed opportune to make a short expedition to the island of Mindoro for the purpose of ascertaining the whereabouts of a great number of whales which had been reported as coming ashore near Calapan. Consequently I went to Mindoro and made arrangements for transportation the next day in a native canoe to the spot where the whales were supposed to be. That evening, however, telegrams were received from Manila stating that a typhoon was on the way. All of the white people in the little village and many of the natives hurried to the old Spanish fort and prepared to spend the night there. It was well that this was done, for the typhoon struck the north end of the islands with tremendous violence and for two days we were practically kept prisoners in the old fortress. It was a most interesting experience and the disagreeable features were very shortly forgotten after the typhoon had ceased. All attempts to reach the whales, however, were useless because of the heavy sea that was running and the tremendous surf pounding the shore all along the north coast.

Returning to Manila I found the Albatross already there and Captain McCormack kindly consented to take the ship to Calapan. The trip resulted in disappointment, however, because the bones of the whales had

*This article, an itinerary and general statement of the collecting trip made for the Museum in 1909 and 1910 by a representative of the Department of Mammalogy, will be followed in later issues of the JOURNAL by detailed reports of work and places visited.

become so softened by being buried with the flesh in the damp sand that only two skulls and a few other parts of skeletons were available.

The Albatross finally left Manila in late October and after a three days' trip reached Sibattick Island, British North Borneo. Here I had my first experience collecting in a tropical forest. Great white camphor-wood trees, some stretching up nearly two hundred feet, and the "Kayu Rajah," or king-tree, equally as high, were hung with vines and creepers forming a tangled network. Palms were interspersed here and there throughout the forest and banana trees were growing in every little clearing. Bird notes could be heard, subdued because of the great height of the trees and sometimes drowned in the shrilling of myriads of locusts and beetles.

The Albatross then visited the North Celebes. In Limbe Strait I collected a number of monkeys, a pig and one of the rare ursine phalangers together with a good series of birds among which were four large hornbills. Another stop, Ternate, was interesting as the place where many of the paradise birds from New Guinea are marketed and sent to Paris and London for millinery purposes.

We got to Makassar for Christmas and were most hospitably received by the Governor and the European residents of the town. It was here that I met His Excellency, Baron Quarles de Quarles, Governor of the Celebes, who has a splendid museum of his own illustrating the anthropology and ethnology of the East Indian native tribes. He became interested in our work and very generously presented to the American Museum a collection of ethnological material, otherwise impossible to obtain.

The Albatross returned to the Philippine Islands in January and exchanging the Filipino members of the crew for white sailors, put out again in heavy weather for Formosa and the Loo-Choo Islands, and then made straight for Nagasaki, Japan. Here we were received with great cordiality by the Governor and the American Consul and obtained information resulting in a trip to Shimonoseki where permission was secured from officials of the Oriental Whaling Company to visit their stations for the purpose of studying and collecting Cetacean material.

Returning to Nagasaki, I definitely arranged to leave the Albatross and eventually forwarded much of my material to Shimonoseki. First I went to the whaling station at Shimidzu on the island of Shikoku. So few whales were taken at this station, however, that I transferred to Oshima, where were taken a splendid blue or sulphur-bottom whale 79 feet in length, the jaws alone of which were nineteen feet long, a sei or sardine whale 46 feet long and a killer of 26 feet length. After being carefully crated these were put on board a schooner and sent to Shimonoseki, whence they were transferred to the Hamburg-American liner Aragonia for New York. With

them was also shipped a killer skeleton which had been taken in Korea and presented by the whaling company with the other material.

The Museum was desirous of securing a large sperm whale and with this end in view I went to the station at Aikawahama, three hundred miles north of Yokohama. Here I remained for more than three months going out on the whaling ships and studying the different specimens as they were brought in. Four species of large whales were taken and there were exceptional opportunities to obtain valuable scientific data, but although some twelve sperm whales had been killed, none were over 47 feet in length. I had almost despaired when finally Captain Fred Olsen of the whaleship

Two of the 27 cases of whale skeletons from Japan. The larger crate has a space measurement of 26 tons and contains a sperm whale which yielded 20 barrels of spermaceti

Rekkusu Maru brought in a specimen 60 feet long and fortunately none of the bones had been broken by the four harpoons used in the capture.

During the time spent at this station, a finback whale 70 feet in length and also ten porpoises of four different species were secured, one of which is apparently new to science. After considerable difficulty the enormous crates containing the skulls and bones of the whales were transported to a village some twelve miles away, loaded onto a Nippon Yusen Kaisha liner and sent to Yokohama, thence being shipped direct to New York by the steamship Welsh Prince.

The courtesy shown to me as a representative of the American Museum

of Natural History was very great both by the president and officials of the Oriental Whaling Company and by the various station masters and captains of the ships. Not only did the company present all of the skeletons to the Museum, but also gave every facility for prosecuting scientific work.

This whaling company is the largest in the world, notwithstanding that the industry in Japan dates back only about fifteen years. Superior methods are used and by making both whale flesh and blubber serve as food, the product of the industry is disposed of in the most profitable way.

After seeing the skeletons safely on board the Welsh Prince I left Japan, going directly to Egypt, touring afterward through Italy, Austria, Germany, Belgium, France and England to inspect the zoölogical gardens and museums and do comparative work on the study collections in the various institutions.

THE MEDICINE PIPE

ITS RITUAL OF PRAYERS AND SONGS GIVEN TO THE MUSEUM IN VALUABLE PHONOGRAPH RECORDS

By Clark Wissler

IN the exhibit for the Plains Indians stands a magnificent medicine pipe. This is one of the most important medicine bundles of the Blackfoot Indians; when belonging to them the pipe and its accessories were never unwrapped except with the appropriate ceremony and never spoken of lightly. That it should be exposed to your gaze from day to day, as it now is, would shock even the most hardened iconoclast of that tribe. There once came to visit the Museum a mixed-blood Piegan, long schooled and practiced in the ways of the white man; but when looking at the exhibit for the Plains Indians he shrank away from the sight of that great pipe and asked that we allow him to walk on the other side of the hall. To give reasons why these people so feel toward this object would be a long story and belongs rather to the scientific interest and purpose of the Museum, while our present fancy takes us in another more human direction.

That this pipe can be exhibited here is another testimonial to the devotion of The-Bear-One. We had hoped to record fully the ritual and other information pertaining to the medicine pipe as a contribution to the Museum's investigation of Plains culture and, knowing that our friend was formerly a medicine-pipe keeper, selected him to give that information. He, like others of his kind, freely gave us such information as we asked for, told us how the first pipe was handed down by the Thunder, how the bundle

must always be opened at the first sound of thunder in the spring, how it may be opened by a vow or to cure the sick, and how it must be cared for. Yet we wanted more; the ritual for that pipe contains prayers and songs in a fixed order which we wished to record with a phonograph.

Before our friend was confronted with this ordeal we made him acquainted with the phonograph. The instrument was not new to him for every trader at his agency owned one; on trade days they ground out the latest and best in solo, chorus and orchestra, all no doubt a great din to his Indian ears. That the machine talked like a white man he knew well enough, it was but in keeping with other performances of that remarkable race. One day when he called we explained that we wished to record his voice, to have it always to keep in memory of him and hoped he would consent to sing a song into the horn. He complied rather indifferently, selecting a common song of his people. At the end he leaned back in his chair with the unmistakable air of one who listens. We adjusted the reproducer to the cylinder just taken and turned on the motor. He listened rather curiously to the scraping and buzzing that always preceded the bursting tone of the record but when the first phrases of his own song struck his ear there was a flash of light from his eyes that we can never forget. That the machine could speak the language of the Indian was, he said, almost beyond belief. He asked many questions, but was particularly anxious to know how we came by such a machine. The fact that its originator was yet alive impressed him.

He sang other songs for us and always asked to hear his records when he called. He even went so far as to repeat certain prayers we heard him offer up at the sun dance, but cautioned us that such were not to be trifled with and asked that they be not repeated to his or other Indian ears. At last as time went on, we found ourselves working out with him the ritual for a medicine pipe and when we came to the songs, we suggested the phonograph. He considered the matter for some minutes, then in a low but distinct voice made a long prayer to the spirits of all the departed medicine pipe keepers, the import of which was that he was about to do something questionable, but that our purpose was noble and honorable and not a mockery, and that he begged their indulgence to do this thing. He then announced himself ready to proceed. Now there are about a hundred songs in this ritual, too many for one sitting; so we stopped before half of them were recorded. He seemed quite enthusiastic and promised to return on the morrow to his task.

We were happy for we could see in our possession the long line of wax records bearing the ritual of this great pipe — but on the morrow he came not. On the following day he appeared, announcing that he would sing

no more in the phonograph for he had received a warning. Even as he was singing that day a messenger was galloping in to call him home where his wife had been seized with a hemorrhage, something she had never before experienced. Was it not sufficient that this affliction should come on his home the moment he began this serious business and to him of all others, the greatest "blood-stopper" of the tribe? Hence, not again. We talked long and earnestly of bleeding and its causes. We learned from him that it was a bad case of nose-bleeding that gave him his fright. We produced a bit of surgical cotton and explained its virtues when properly manipulated and offered our assistance at the next attack. He tucked some of the cotton in his belt and went his way.

We worked with other Indians on less difficult subjects and waited. At last The-Bear-One surprised us by announcing that he would proceed with the phonograph. He gave no explanations and we asked for none. Fortunately, nothing occurred to interrupt him and the ritual was completed.

It was some time after this that we made our first formal request of The-Bear-One. We asked his aid to secure a medicine pipe bundle. He made no comment beyond stating that since we now had the ritual and the songs the request was reasonable.

We did not see him for a long time after this, but heard it talked about that The-Bear-One now had a pipe bundle in his tipi and had had a dream in which he was asked to give it to a certain white man, also seen in the dream. To these Indians, dreams are sacred and not to be disregarded; hence, though to their minds a terrible fate threatened the pipe, there seemed no remedy. The hope was that the certain white man would shrink from the responsibility. One day our friend sent for us. When seated in his tipi he recounted our request, his dream, and pointed to the bundle. The transfer was arranged and finally executed without hindrance. The event was something of a scandal in the tribe, but nothing was said before us and the prestige and medicine power of our friend was too great to permit calling him to task. Yet of talk there was no lack. Strange to say no Indian seemed to question the reality of the alleged dream; but while The-Bear-One never broke faith with us to our knowledge and ever seemed sincere, we never felt quite certain about that dream.

So when you look upon this pipe do not forget the hopes and fears of many that once clustered around it; that even its story is not yet told; that though The-Bear-One has become as the dust of the plains, the works of his hand and even his voice are here.

RELATION BETWEEN HABIT AND STRUCTURE IN THE INSECT WORLD

By Frank E. Lutz

WE do not know whether an insect has a given structure as an adaptation to its habits of life or whether the habits have been developed to conform to changed structures. Following the work of Darwin, most biologists believed that the greater number of structures arose gradually either through the natural selection of variations favorable to a given habit or by the effect of use, and the term "adaptation" has come to imply as much. Specifically, this would mean that a grasshopper has long powerful hind legs either because of the fact that its ancestors with the longest, strongest hind legs were the best jumpers and so were most successful, or through continued use by its ancestors of their hind legs for jumping.

In this connection two things must be said. First, not a single instance of the inheritance of the effect of use or disuse upon anatomical characters has ever been experimentally proved, while there are numerous cases of experimental negative evidence. Second, in recent years many cases have been recorded of large heritable variations arising suddenly. Among these is that of abnormally large hind legs in no less common an animal than the domestic cat. Now when these "rabbit cats" run they do so by a series of leaps. The large hind legs are not adapted (in the technical sense) to jumping but the habit of jumping is adapted to the large hind legs. A cockroach's flat body enables it to live in cracks and crevices. If its body were of such shape that it could not, it would live elsewhere as its relatives do. Natural selection doubtless accounts for the failure of many variations to be perpetuated, but doubtless many variations are perpetuated either because the eliminating action of natural selection is dodged by a change of habits, that is by habit becoming adapted to structure; or because they are of neutral value fitting in with the habits of their possessors in the struggle for existence — that is, natural selection does not effect them at all.

There is another class of characters. They are very striking but no use can ever be imagined for them. To this class belong most of the patterns of coloration, many of the horns and spines, and the unusual development of some parts of the body. These are explained as having come about either through orthogenesis or the effect of the environment or in other ways which are too complex to be mentioned here. If this be true, is it not probable that some, at least, of the characters which are used by insects

are merely used either because the insect is forced to, as in the case of the long hind legs for jumping, or because it finds it convenient, as living in crevices when the shape of the body enables it to do so?

Therefore, let us be on the safe side and use the non-committal phrase, "the relation between habit and structure," rather than the committal one, "adaptation of structure to habit." Examples of such relation are legion. The large wings and slender bodies of dragon flies make them supreme in the air but clumsy on the ground. The ground beetles have legs of such length and suppleness that they are enabled to run swiftly. The "electric light bug" whose home is the water has paddle-shaped legs and a keel-shaped body. The water striders skate over the surface of ponds and streams by virtue of slender, hair-covered feet which do not break the surface film. The mole cricket burrows in the ground by using the spade-shaped front legs. The mantis catches its prey with its toothed front legs. The scalpel-like ovipositor of the katydid slits leaves and the bar-like one of the cricket makes holes in the ground for the reception of eggs.

The subject is most fascinating and therefore one in which we are apt to lose our judicial balance. At any rate, however the relations come about, they are not only numerous and striking but, as is shown by the dominance of insect life, effective.

FORT LEE DINOSAUR

By W. D. Matthew

THE discovery of a fossil reptile skeleton, probably a dinosaur, at Fort Lee almost within the city of New York is of exceptional interest to New Yorkers. It was found on the red shales which underlie the Palisades and outcrop at the river's edge opposite 160th Street almost directly in front of the site of old Fort Lee and just south of the boundary of the Palisades Park, being discovered there by three post-graduate students of Columbia University, Messrs. J. E. Hyde, D. D. Condit and A. C. Boyle, through whose courtesy and the good offices of Professor Kemp, the Museum has been enabled to acquire this specimen.

The red shales and sandstones in which this fossil was found belong to the Triassic period, the early part of the Age of Reptiles. The formation extends over a considerable part of New Jersey and is found also in the lower part of the Connecticut Valley and at other points along the Atlantic Coast, but fossils are everywhere rare and vertebrate fossils especially so. Great numbers of footprints indeed have been found in two or three locali-

ties, at Turners Falls on the Connecticut, near Boonton and elsewhere in New Jersey. But of the animals which made these footprints only two or three partial skeletons of small species have ever come to light.

This animal probably lived among the hills and valleys where now New York City stands. He was one of the lords of creation in his time — some ten million years ago, for the dinosaurs were the dominant land animals then and long after until the higher quadrupeds appeared. He was not indeed the "oldest inhabitant," for many a race of animals had lived and died before his time, and no doubt they lived on what is now Manhattan Island as well as elsewhere, but he is the oldest whose mortal remains have actually been preserved to our day. Could he have arisen from his mausoleum in the rocks at Fort Lee, he might have supplied us with a rather startling volume of "Recollections of Early New York." For in his time there were no Palisades, and from the eastern bank of what is now the Hudson River one might look across a broad estuary to the west and southwest, while the East River and Long Island, as far as we know, were not yet in existence.

MUSEUM NEWS NOTES

Since our last issue the following persons have been elected to membership in the Museum:

Patron, Mr. Henry C. Frick;

Life Members, Messrs. Larz Anderson, George F. Baker, Jr., Lynford Biddle, W. Lyman Biddle, J. Insley Blair, Andrew Carnegie, Richard M. Colgate, Marcellus Hartley Dodge, John Sherman Hoyt, Richard S. Hungerford, William Adams Kissam, Edward deP. Livingstone, George Grant Mason, John G. McCullough, Moses Charles Migel, George B. Post, Jr., Henry H. Rogers, Schuyler Schieffelin, H. M. Tilford, and Henry Walters, Mr. and Mrs. Paul M. Warburg, Dr. George T. Howland and Mmes. Anne W. Penfield, Felix M. Warburg and William Seward Webb;

Sustaining Members, Messrs. James Marwick and Frederic S. Wells and Mrs. Benjamin Brewster;

Annual Members, Messrs. J. J. Albright, A. Chester Beatty, William Adams Brown, Charles du Pont Coudert, Charles Curie, Jr., Bryan Daugherty, Melville Egleston, William Farnsworth, John W. Garrett, Robert Garrett, Russell Hopkins, Arthur Ingraham, Norman James, Emory S. Lyon, William G. Mather, Paul Morton, Henry F. du Pont, Cornelius Van Vorst Powers, William Sproule,

THOMAS H. STRYKER, JOHN DAVENPORT WHEELER, A. LUDLOW WHITE and ELMORE A. WILLETS, DRS. WALTER BROOKS BROUNER, A. MONAE LESSER, MORRIS MANGES, MALCOLM MCLEAN, STEWART PATON and THOMAS M. WEED, REV. WILLIAM GREENOUGH THAYER, HONORABLE HENRY B. QUINBY and MMES. JOHN R. DREXEL, JOHN HENRY HAMMOND and REGINALD DE KOVEN.

THE "AGE OF MAMMALS" by President Henry Fairfield Osborn has come from the press of the Macmillan Company and will receive notice in a later issue of the JOURNAL.

THERE has just been presented to the American Museum of Natural History and placed on exhibition in the Morgan-Tiffany Gem Room a specimen of the new gem Morganite (rose beryl). It is a long oval stone of rich rose color and weighs $57\frac{1}{4}$ carats. This gem was named by Dr. George Frederick Kunz, the Honorary Curator of Gems of the American Museum, at a meeting of the New York Academy of Sciences on December 3, 1910.

DIRECTOR HERMON CAREY BUMPUS has recently been decorated by His Majesty, King Charles of Roumania, with the Grand Cross of the Commander of the Order of the Crown. This highest rank of the Order is bestowed upon Director Bumpus in recognition of his well-known services to science.

DR. A. D. GABAY of New York City has presented to the Museum a valuable collection of ground and polished shells from California and Japan. These specimens with their convolutions and superb nacre make objects of great beauty. They will be installed in certain sections of the Hall of Mollusca, illustrating the economic and ornamental uses of shells.

DURING the past month the Museum has received, as a gift from Mr. D. C. Staples, a small but very interesting collection of archæological and ethnological material which comes from the Provinces of Esmeraldas and Manabi in the extreme northern part of Colombia, South America.

THE CHILD WELFARE EXHIBIT will be held during January in the Seventy-first Regiment Armory, New York City. At this exhibit the Museum will illustrate the work it is doing in coöperation with the public schools. It will show the loan collections sent to the schools, photographs and descriptions of the Children's Room at the Museum and of the Room for the Blind, drawings and models made by children in these rooms and

photographs of permanent exhibits especially interesting to children. As a part of the exhibit an automatic stereopticon will display pictures used in the pupils' lecture courses.

TWENTY-THREE cases of zoölogical material representing several hundred skins of birds and mammals have arrived in New York as the first shipment of specimens from the Stefánsson-Anderson Arctic Expedition.

MEETINGS OF SOCIETIES.

Public meetings of the New York Academy of Sciences and its Affiliated Societies are held at the Museum according to the following schedule:

On Monday evenings, The New York Academy of Sciences:
First Mondays, Section of Geology and Mineralogy.
Second Mondays, Section of Biology.
Third Mondays, Section of Astronomy, Physics and Chemistry.
Fourth Mondays, Section of Anthropology and Psychology.

On Tuesday evenings, as announced:
The Linnæan Society of New York, The New York Entomological Society and the Torrey Botanical Club.

On Wednesday evenings, as announced:
The New York Mineralogical Club.

On Friday evenings, as announced:
The New York Microscopical Society.

The programmes of the meetings of the respective organizations are published in the weekly *Bulletin* of the New York Academy of Sciences and sent to the members of the several societies. Members of the Museum on making request of the Director will be provided with the *Bulletin* as issued.

LECTURE ANNOUNCEMENTS

PEOPLE'S COURSE

Given in coöperation with the City Department of Education.
Tuesday evenings at 8: 15 o'clock. Doors open at 7: 30.

The first five of a course of eight lectures on "New Movements in Old Asia."

January 3 — Dr. Arthur Judson Brown, "New World Conditions in the Far East — the Forces at Work."
January 10 — Dr. Arthur Judson Brown, "Imperial Japan." Illustrated.
January 17 — Mr. Edwin Emerson, "The Russo-Japanese War." Illustrated.
January 24 — Dr. Arthur Judson Brown, "Independent Korea." Illustrated.
January 31 — Dr. Arthur Judson Brown, "The Struggles between Russia and Japan for the Leadership in the Far East."

Saturday evenings at 8: 15 o'clock. Doors open at 7: 30.

January 7 — Dr. Hermann M. Biggs, "The Health of New York."
January 14 — Dr. William Halloch Park, "Communicable Diseases — Their Prevention."
January 21 — Dr. H. D. Pease, "The Relation of Flies to the Transmission of Disease."
January 28 — Dr. Ernst J. Lederle, "The City Milk Supply and Its Control."

LEGAL HOLIDAY COURSE

Fully illustrated. Open free to the public. Tickets not required.
Lectures begin at 3: 15 o'clock. Doors open at 2: 45.

January 2 — Mr. Roy W. Miner, "Corals and Coral Islands."
February 22 — Prof. C-E. A. Winslow, "Insect Carriers of Disease."